UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/403,075	05/10/2000	GARY L. JOHNSON	CPI-042CPUS	6811

7590 05/22/2002

GIULIO A DECONTI JR
LAHIVE & COCKFIELD
28 STATE STREET
BOSTON, MA 02109

EXAMINER	
HUNT, JENNIFER ELIZABETH	
ART UNIT	PAPER NUMBER
1642	9

DATE MAILED: 05/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/403,075	Applicant(s) JOHNSON, GARY L.	
	Examiner Jennifer E Hunt	Art Unit 1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,12,16,19,20 and 43-62* is/are pending in the application.

4a) Of the above claim(s) *5-8,16,47,48,51,56,57 and 62* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,12,19,20,43-46,49,50,52-55 and 58-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's election of Group I, claims 1-8, 12, 16, 19-20, and 43-62, and species "mouse isoform" in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Acknowledgement is made of applicant's cancellation of claims 9-11, 13-15, 17-18, 21-42, and 63-67. Claims 1-8, 12, 16, 19-20, and 43-62 are pending in the application. The species "mouse isoform" has been found in the prior art, and thus claims 5-8, 16, 47-48, 51, 56-57, and 62, drawn to the rat or human isoforms have been withdrawn from consideration, and claims have been considered only to the extent that they read on the mouse isoform. Claims 1-4, 12, 19-20, 43-46, 49-50, 52-55, and 58-61 have been considered herein.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 43-46, 49-50, 52-55, and 58-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 43-46, 49-50, 52-55, and 58-61 are unclear in the recitation of "consisting of about..." The metes and bounds of "consisting of about..." cannot be

determined, because consisting of requires a closed, specific boundary of the claimed sequence, while "about" allows for variation of the claimed sequence, and thus the terms conflict with one another, and make it unclear what is encompassed by the claims.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-4, 12, 19-20, and 43-46, 49-50, 52-55, and 58-61 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

Claims 1-4, 12, 19-20, and 43-46, 49-50, 52-55, and 58-61 are broadly drawn to an isolated nucleic acid molecule comprising a fragment of at least 100 contiguous nucleotides of SEQ ID NO:3, or a nucleic acid which encodes a fragment of SEQ ID NO:4 comprising at least 15 amino acids, or allelic variants which hybridize to SEQ ID NO:3, or a nucleic acid molecule which has at least 75%, or 85%, or 95% homology to a nucleotide sequence consisting of about nucleotides 2637-4493 of SEQ ID NO:3, or a nucleic acid molecule which has at least 75% or 85% or 95% homology to SEQ ID NO:4. The claims are drawn to a nucleic acid molecule of almost any size which is only defined by a small number of nucleic acid resides, hence the claims are drawn to

nucleic acid molecules which minimally contain or encode only portions of SEQ ID NO:3 or 4. Thus the claims are drawn to a large genus of molecules. In the case of small identified nucleic acid residues claimed with open language, the genus of the polynucleotides comprising a partial sequence encompasses a variety of subgenera with widely varying attributes. The specification discloses only the structural features the polynucleotide of SEQ ID NO:3 and the polypeptide of SEQ ID NO:4. The specification lacks information to lead one of ordinary skill in the art to understand that the applicant had possession of the broadly claimed genus of polynucleotides at the time the instant application was filed. Applicant is referred to the guidelines 112, first paragraph, published in the Official gazette and also available on www.uspto.gov.

7. Claims 1-4, 12, 19-20, 43-46, 49-50, 52-55, and 58-61 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the polynucleotide of SEQ ID NO:3 and the polynucleotide which encodes SEQ ID NO:4, does not reasonably provide enablement for an isolated nucleic acid molecule comprising a fragment of at least 100 contiguous nucleotides of SEQ ID NO:3, or a nucleic acid which encodes a fragment of SEQ ID NO:4 comprising at least 15 amino acids, or allelic variants which hybridize to SEQ ID NO:3, or a nucleic acid molecule which has at least 75%, or 85%, or 95% homology to a nucleotide sequence consisting of about nucleotides 2637-4493 of SEQ ID NO:3, or a nucleic acid molecule which has at least 75% or 85% or 95% homology to SEQ ID NO:4. The specification does not

enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Factors to be considered in determining scope and enablement are: 1) quantity of experimentation necessary, 2) the amount of direction or guidance presented in the specification, 3) the presence or absence of working examples, 4) the nature of the invention, 5) the state of the prior art, 6) the relative skill of those in the art, 7) the predictability of the unpredictability of the art, and 8) the breadth of the claims (see Ex parte Forman, 230 USPQ 546, BPAI, 1986).

The claims are broadly drawn to an isolated nucleic acid molecule comprising a fragment of at least 100 contiguous nucleotides of SEQ ID NO:3, or a nucleic acid which encodes a fragment of SEQ ID NO:4 comprising at least 15 amino acids, or allelic variants which hybridize to SEQ ID NO:3, or a nucleic acid molecule which has at least 75%, or 85%, or 95% homology to a nucleotide sequence consisting of about nucleotides 2637-4493 of SEQ ID NO:3, or a nucleic acid molecule which has at least 75% or 85% or 95% homology to SEQ ID NO:4, and the corresponding vectors, host cells, kits, and methods of detection using such.

The specification discloses SEQ ID NO:3 and 4, and that these are MEKK1 polynucleotides and polypeptides, respectively.

Thus the specification discloses a single mouse MEKK1 polynucleotide and the corresponding encoded polypeptide, while the claims encompass a broad range of sequences which minimally contain variants and portions of the single disclosed

species. Variations in nucleic acid sequences are known in the art to be unpredictable, as set forth below.

Bowie et al (Science, 1990, 247:1306-1310) teach that an amino acid sequence encodes a message that determines the shape and function of a protein and that it is the ability of these proteins to fold into unique three-dimensional structures that allows them to function and carry out the instructions of the genome and further teaches that the problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex. (col 1, p. 1306). Bowie et al further teach that while it is known that many amino acid substitutions are possible in any given protein, the position within the protein sequence where such amino acid substitutions can be made with a reasonable expectation of maintaining function are limited. Certain positions in the sequence are critical to the three dimensional structure/function relationship and these regions can tolerate only conservative substitutions or no substitutions (col 2, p. 1306). The sensitivity of proteins to alterations of even a single amino acid in a sequence are exemplified by Burgess et al (J of Cell Bio. 111:2129-2138, 1990) who teach that replacement of a single lysine reside at position 118 of acidic fibroblast growth factor by glutamic acid led to the substantial loss of heparin binding, receptor binding and biological activity of the protein and by Lazar et al (Molecular and Cellular Biology, 1988, 8:1247-1252) who teach that in transforming growth factor alpha, replacement of aspartic acid at position 47 with alanine or asparagine did not affect biological activity while replacement with serine

or glutamic acid sharply reduced the biological activity of the mitogen. These references demonstrate that even a single amino acid substitution will often dramatically affect the biological activity and characteristics of a protein. In addition, Bork (Genome Research, 2000,10:398-400) clearly teaches the pitfalls associated with comparative sequence analysis for predicting protein function because of the known error margins for high-throughput computational methods. Bork specifically teaches that computational sequence analysis is far from perfect, despite the fact that sequencing itself is highly automated and accurate (p. 398, col 1). One of the reasons for the inaccuracy is that the quality of data in public sequence databases is still insufficient. This is particularly true for data on protein function. Protein function is context dependent, and both molecular and cellular aspects have to be considered (p. 398, col 2). Conclusions from the comparison analysis are often stretched with regard to protein products (p. 398, col 3).

Therefore in light of the unpredictable nature of the art, the breadth of the claims, the complex nature of the invention, the lack of guidance or working examples in the specification, one of skill in the art would not be enabled to make and use the invention commensurate in scope with the claims.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-4, 12, and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson, WO 95/28421 (IDS A6.)

Johnson, WO 95/28421 teaches the mouse homolog of the MEKK1 polynucleotide, and the deduced amino acid sequence of the mouse homolog of the MEKK1 polynucleotide (se table 1, pages 26-28.) Johnson, WO 95/28421 further teaches the MEKK1 mouse polynucleotide comprised in a vector, and in a host cell, and methods of expressing the MEKK1 polypeptide using such (see pages 52-61.) Johnson, WO 95/28421 further teaches methods of detecting MEKK1 polynucleotides, and corresponding kits (see pages 50-51 and 63.) The MEKK1 mouse polynucleotide disclosed in Johnson, WO 95/28421 has at least 100 nucleic acids which correspond to SEQ ID NO:3, and also encodes a polypeptide, which shares at least 15 amino acids with SEQ ID NO:4.

10. Claims 1-4, 12, and 19-20, are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson, WO 94/24159 (IDS A5.)

Johnson, WO 94/24159 teaches the mouse homolog of the MEKK1 polynucleotide, and the deduced amino acid sequence of the mouse homolog of the MEKK1 polynucleotide (see pages 8-13.) Johnson, WO 94/24159 further teaches the MEKK1 mouse polynucleotide comprised in a vector, and in a host cell, and methods of expressing the MEKK1 polypeptide using such. Johnson, WO 94/24159 further teaches methods of detecting MEKK1 polynucleotides, and corresponding kits (see

pages 50-59.) The MEKK1 mouse polynucleotide disclosed in Johnson, WO 94/24159 has at least 100 nucleic acids which correspond to SEQ ID NO:3, and also encodes a polypeptide, which shares at least 15 amino acids with SEQ ID NO:4.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer E Hunt whose telephone number is (703) 308-7548. The examiner can normally be reached on Monday-Friday, 6-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached on (703) 308-3995. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3014 for regular communications and (703) 308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0196.

Jennifer E Hunt
Examiner
Art Unit 1642

jeh
May 19, 2002

SHEELA HUFF
PRIMARY EXAMINER